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REVIEW OF SECTORAL CLUSTERS: FIRST PHASE: TOXIC CHEMICALS AND HAZARDOUS WASTES

Toxic chemicals

Report of the Secretary-General

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INTRODUCTION

1. In its decision 1993/314 on 29 July 1993 the Economic and Social Council approved the provisional agenda for the second session of the Commission on Sustainable Development which, in item 6 (b), provided for a review of sectoral clusters, first phase: toxic chemicals and hazardous wastes.

2. In thematic reports such as this, corresponding to the Agenda 21 sectoral clusters, the Commission requested the Secretary-General to include, inter alia, information on the main activities that countries are undertaking or planning. In order to give the Secretariat sufficient time to analyse the information received, the Commission urged Governments to submit their reports not less than six months prior to the Commission's sessions (E/1993/24, Add.1). Unfortunately the Secretariat had received only a few national reports at the time of the preparation of the present report. It is based, therefore, mostly on information available within the United Nations system.

I. GENERAL OVERVIEW

3. Almost 11 million naturally occurring or man-made chemicals have been identified. 1/ About 100,000 chemicals are currently produced on a commercial basis, with 1,500 chemicals, however, accounting for 95 per cent of world chemical production. Approximately 1,000 new chemical substances enter the market every year.

4. The world chemical industry has experienced phenomenal growth during the past four decades. Worldwide sales reached $1,206 billion in 1991, with petrochemicals having the largest share, of about 40 per cent. In the same year, the chemical industry accounted for 7 per cent of global GDP and 9 per cent of international trade. The main geographical markets and production bases are Western Europe, the United States and Japan, which together account for 90 per cent of world sales and output. 2/

5. The trend in chemical and material development, principally in industrial countries, is increasingly towards more complex products such as powder alloys, composites, ceramics and hybrid materials. An increase in the use of chemicals can be foreseen in the food, pharmaceutical, engineering and construction industries.

6. However, in the paint, glue, chemical engineering, metal manufacturing and laundry and dry cleaning industries, one can already see a shift towards simplicity and water-based systems, often due to environmental concerns, at least in some regions. 3/ Increased specialization in the industry, leading to more international trade, and a shift of more chemical production to developing countries, are expected.

7. The widespread and growing use of chemicals in all sectors has been accompanied by accumulating evidence of their adverse effects, including pollution of land, water, oceans and the atmosphere. The chemical industry has developed without sufficient knowledge and consideration of its impact on human

health and the environment, especially with regard to long-term risks. Dramatic occurrences such as the industrial discharge of mercury in Minamata, Japan, which poisoned thousands of people, and the leak from a pesticides factory in Bhopal, India, which killed more than 2,000 people and blinded or injured 200,000 more, have made the risks increasingly apparent. Control measures were often initiated only after the accidents had occurred. A precautionary principle was, in general, not applied - that is, chemicals were not examined for health and environmental risk before entering their production, use and waste disposal cycles. If a risk assessment was made, it was mostly with a risk to human health in mind. The additional aspect of risk to the environment is a fairly recent consideration, and methods for its assessment are still in the initial stages of development. 4/

8. Because of the trend in the world chemical industry towards more complex products, exposure and risks are bound to increase at all stages of production, transportation, storage and use. This is particularly so in the use of pesticides and fertilizers in the agricultural sector where the capabilities for safe use are very limited. Pesticides, which are toxic by nature, pose particular problems.

II. REVIEW OF PROGRESS ACHIEVED IN THE PROGRAMME AREAS OF CHAPTER 19 OF AGENDA 21

A. International cooperation

9. In chapter 19 of Agenda 21, entitled Environmentally sound management of toxic chemicals, including prevention of illegal international traffic in toxic and dangerous products, the United Nations Conference on Environment and Development (UNCED) emphasized that a substantial use of chemicals is essential to meet the social and economic goals of the world community and that today's best practice demonstrates that they can be used widely in a cost-effective manner and with a high degree of safety. However, a great deal remains to be done to ensure the environmentally sound management of toxic chemicals, within the principles of sustainable development and improved quality of life for humankind. Two of the major problems, particularly in developing countries, are lack of sufficient scientific information for the assessment of risks entailed by the use of a great number of chemicals, and lack of resources for the assessment of chemicals for which data are at hand. UNCED further emphasized that gross chemical contamination, with grave damage to human health, genetic structures, reproductive outcomes, and the environment, continues to exist in some of the world's most important industrial areas. Restoration will require major investment and the development of new techniques. The long-range effects of pollution, on even the fundamental chemical and physical processes of the Earth's atmosphere and climate, and the importance of those effects are only beginning to be understood. UNCED recognized that a considerable number of international bodies are involved in work on chemical safety. In many countries work programmes for the promotion of chemical safety are in place. Such work has international implications, since chemical risks do not respect national boundaries. However, a significant strengthening of both national and international efforts is needed in order to achieve an environmentally sound management of chemicals.

10. In this context UNCED approved six programme areas for action at the national and international levels:

(a) Expanding and accelerating international assessment of chemical risks;

(b) Harmonization of classification and labelling of chemicals;

(c) Information exchange on toxic chemicals and chemical risks;

(d) Establishment of risk reduction programmes;

(e) Strengthening of national capabilities and capacities for management of chemicals;

(f) Prevention of illegal international traffic in toxic and dangerous products.

11. Unfortunately only a small number of reports were submitted by Governments on progress made in the implementation of the six programmes. Consequently the scope of the present report is limited, and a considered assessment of progress made can be attempted only when much more information is submitted on country experiences. However, the United Nations Environment Programme, as task manager, submitted a comprehensive report on the activities of the United Nations system and other multilateral organizations. The rest of this section, therefore, describes mainly the activities of the United Nations system in the implementation of the programmes and concludes with an outline of new initiatives for their accelerated implementation.

1. Expanding and accelerating international assessment of chemical risks

12. Data on the properties of and exposure to a chemical are required before a chemical risk assessment can be conducted. Such data are provided primarily by industry, government and private-sector research institutions. In order to achieve international acceptance, data quality and test method harmonization are important. Of particular note are the activities of the Organisation for Economic Cooperation and Development (OECD), the International Programme on Chemical Safety (IPCS), a joint programme of the International Labour Organization (ILO), UNEP and the World Health Organization (WHO)) and the United Nations Committee of Experts on the Transport of Dangerous Goods (UN/CETDG). OECD and the European Union (EU) have taken significant steps to encourage industry to generate and provide data of good quality on which to base chemical risk assessments.

13. Chemical hazards and risks have been assessed, and guideline limits for exposure have been produced by international organizations for many years. While several types of international assessments are available, IPCS environmental health criteria documents are the most comprehensive and authoritative toxicological evaluations of chemicals. The production of such evaluations is a resource-intensive activity. At present IPCS produces an

average of 14 environmental health criteria documents a year. The time-frame for producing such a document is at least two years.

14. Publication of a document on scientific principles for the assessment and characterization of risks to human health associated with chemical exposure and on the derivation of guidance values for health-based exposure limits is anticipated in 1994. Another initiative of IPCS is to rationalize the world-wide production and acceptability of criteria documents which describe toxic hazards and risks. As part of this initiative, UNEP's International Register of Potentially Toxic Chemicals (IRPTC) and the European Chemical Industry Ecology and Toxicology Centre (ECETOC) are producing an inventory of all criteria documents planned, in preparation, or published. IPCS has, in addition, recently undertaken, in cooperation with OECD, a project aimed at harmonizing approaches used by countries or groups of countries in toxicological risk assessment. OECD, with UNEP, is mainly responsible for the development of methodologies to assess environmental hazards and exposure, whereas IPCS is mainly responsible for the development of methodologies that assess effects on human health.

15. Toxicological evaluations of pesticide residues in food have also been carried out by the FAO/WHO's Joint Meeting on Pesticide Residues (JMPR), and additives, contaminants and the residues of veterinary drugs in food have been studied by the FAO/WHO's Joint Expert Committee on Food Additives (JECFA), which also produces evaluations used as a basis for recommendations by the Codex Alimentarius Commission. The scope of JMPR - to be renamed the Joint Meeting on Pesticides (JMP) - will be widened in 1994 to include consideration of public health, occupational health and environmental concerns. A number of organizations have embarked on new initiatives to address the risk assessment of pesticides. OECD has a newly established Pesticides Activity, with a major workshop planned to review progress in environmental assessment. A EU directive concerning the placing of plant-protection products on the market became effective in 1993. The directive is supported by guidelines and criteria for evaluating pesticides.

16. The International Agency for Research on Cancer (IARC), OECD with its toxicological assessments of high production volume chemicals, the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) and WHO are also active in risk assessment and provide guidelines for exposure to chemicals as they relate to each expert's sphere of interest. Air-quality guidelines are being updated by WHO's Regional Office for Europe and will be further evaluated with relevance to global air quality standards in collaboration with IPCS and EU.

17. Risk assessment methodologies are published by several organizations - e.g., OECD, ILO and IPCS. Chemicals often need to be prioritized for risk assessment. This has been done mainly on the basis of hazard potential and/or exposure potential by, for example, IPCS, UNEP, OECD and EU.

18. In 1993, EU adopted a directive containing general principles for the assessment of risks posed by new substances to workers, consumers, the general public and the environment, and the EU Regulation on the Evaluation and Control of the Risks of Existing Substances came into force. The Regulation foresees

the collection of data, in a harmonized electronic format, for over 10,000 substances during the period 1994-1998 and storage of that data on the EUCLID database. Detailed risk assessments will be conducted on priority substances.

2. Harmonization of classification and labelling of chemicals

19. International initiatives in the area of harmonization of classification and labelling of chemicals started a few years before UNCED. Following a 1989 International Labour Conference resolution, ILO, in consultation with a number of international, regional and national bodies concerned with the classification and labelling of chemicals, initiated action to ensure the establishment of a globally harmonized system and issued a report assessing the magnitude of the task. The report (1992) indicated that four major existing systems should be used as a basis for establishing a harmonized global classification and labelling system. The systems are: the United Nations Recommendations on the Transport of Dangerous Goods (RTDG); EU directive 67/548/EEC, as amended for the seventh time (92/32/EEC), on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances; the combined system Toxic Substances Control Act/Hazard Communication Rule in the United States of America; and the combined system Workplace Hazardous Materials Information System/Environmental Protection Act in Canada.

20. The United Nations Recommendations were developed by the United Nations Committee of Experts on the Transport of Dangerous Goods, which is serviced by the Economic Commission for Europe (ECE). They have been used as a basis for national and international transport regulations/instruments for various modes of transport. There is close cooperation among international transport organizations in this area.

21. In 1991/92 an OECD clearing-house led by EU, Sweden and the United States was established to undertake harmonization of classification criteria for acute oral, dermal and inhalation toxicity and hazard to the environment. The overall perception seems to be that these proposals are an acceptable basis for further negotiation and that the impact of expected changes in different systems, including the United Nations Recommendations, although not negligible, would be manageable. The OECD clearing-house also elaborated proposals for harmonized criteria for aquatic toxicity based on those developed in the EU and the Nordic countries. It also made preparations for developing criteria for the soil/terrestrial environment. OECD is preparing work plans to consider harmonization of criteria for categories such as long-term toxic, irritant, sensitizer, carcinogen, mutagen and toxic to reproduction. Preliminary work, at the level of national expert, has started on the categories of carcinogen and toxic to reproduction.

22. In 1992 the IPCS Coordinating Group for the Harmonization of Chemical Classification Systems was established, with ILO providing the secretariat. The Group is an informal forum for interested national, regional and international bodies and organizations, including those representing the interests of workers, employers, industries, and bodies concerned with consumer and environmental protection. It has agreed that OECD will be the focal point for harmonization

of all human health and environmental effects. ILO will be the focal point for harmonization of physical hazards of chemicals and for hazard communication - i.e., labelling and chemical safety data sheets.

23. Other international activities of relevance to this programme area are those undertaken in relation to the implementation of the ILO Chemicals Convention (1990) at the national level, FAO guidelines on good labelling practices for pesticides, the peer-reviewed International Chemical Safety Cards of IPCS, and the elaboration of test methods by OECD and the United Nations Committee of Experts. The International Occupational Safety and Health Information Centre of ILO (ILO/CIS) has started to elaborate work plans for the harmonization of hazard communication. In addition, IPCS and ILO/CIS have conducted a preliminary analysis of phraseology used in chemical safety data sheets.

3. Information exchange on toxic chemicals and chemical risks

24. Information exchange on toxic chemicals and chemical risks is the task of most international organizations and programmes involved in the promotion of chemical safety. Many varieties of information are available from United Nations bodies/programmes and other international organizations, some of them mentioned above. IPCS also produces poison information monographs and a computerized information package, called INTOX, for use by poisons information centres. ILO/CIS has collected and disseminated, with the aid of nearly 70 national centres, technical and legal information on occupational health and safety. UNIDO is planning to set up a global chemical safety information network for both chemical and pesticide production in developing countries, particularly aimed at small and medium-sized operations.

25. UNEP/IRPTC carries data profiles relevant to the assessment of hazards and risks posed by chemical substances to human health and the environment, waste management, and legal information on national and international regulatory control measures. IRPTC also maintains a data bank to manage and implement the London Guidelines and the Prior Informed Consent (PIC) procedure. IRPTC is currently working on having in its network more active participation from other information systems. It also intends to revise its strategy for the selection of data and plans to establish, in cooperation with IPCS, expert panels to validate the quality of information contained in its system. The resulting validated data sets are intended to provide a source of basic data of internationally recognized quality which are needed for assessing chemical risks in both national and international forums. It is expected that these validated data sets will facilitate mutual acceptance of risk assessments among concerned groups and organizations.

26. The IRPTC chemical identity file is being expanded to assist developing countries to set up their own national inventories of manufactured and imported chemicals. IRPTC is also preparing to act as a repository of OECD Screening Information Data Set dossiers to allow distribution to non-OECD countries. IPCS, ILO/CIS and UNEP/IRPTC are preparing a "United Nations" CD-ROM to include a number of databases on chemical safety information. The United Nations prepared, with UNEP/IRPTC and WHO, the Consolidated List of Products Whose

Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or Not Approved. The list includes all relevant information collected and disseminated by the United Nations system and is mandated and reviewed by the General Assembly.

27. A number of mechanisms for disseminating information have been developed - for example, the London Guidelines for the Exchange of Information on Chemicals in International Trade, adopted by UNEP in 1987. The Guidelines, which are voluntary, provide a mechanism for Governments to share scientific, technical, economic and legal information and thereby increase chemical safety. They were amended in 1989 to incorporate the PIC procedure. The PIC procedure has also been incorporated in the FAO International Code of Conduct on the Distribution and Use of Pesticides. UNEP and FAO have established a joint programme providing operational assistance to Governments, particularly those of developing countries, in implementing the PIC procedure. Training and technical advice are organized jointly with UNITAR. UNEP has established a task force to consider modalities for a legally binding instrument on the mandatory application of the PIC procedure. A set of elements that might be included in such an instrument have been identified and will be further elaborated in 1994.

4. Establishment of risk reduction programmes

28. Chemical risk reduction programmes include fundamental arrangements such as chemical safety legislation and enforcement and adequate labelling, responsible care and stewardship by industry. The establishment and implementation of the PIC procedure provides an immediate way to reduce the risk posed by chemicals banned or severely restricted in one or more countries.

29. The reduction of chemical risks in food is addressed in the Codex Alimentarius Commission recommendations of acceptable daily intakes in food and maximum residue levels in crops. The recommendations serve as guidelines for many countries in their regulatory work on food safety. In the reduction of pesticide risks, FAO has been active through the adoption of an International Code of Conduct on the Distribution and Use Of Pesticides, which represents a wide consensus on pesticide management among Governments, industry and non-governmental organizations. FAO is preparing to review the implementation of the Code. FAO and UNEP have assisted developing countries in the implementation of integrated pest management and also jointly co-sponsor the Panel of Experts on Integrated Pest Control in Agriculture. FAO/UNEP/WHO are collaborating on a project to publish guidelines on the treatment and disposal of bulk and small quantities of pesticide waste aimed especially for developing countries. OECD intends to use the results of a recent survey of pesticide risk reduction activities in member countries as a basis for setting priorities for future work. There is a proposal for a EU biocides directive, which will establish a list of approved active ingredients in non-agricultural pesticides, and will complement an existing directive on plant protection products. Some countries have found that attaching a high cost to re-registering older pesticides has removed the higher risk chemicals from the market.

30. WHO is promoting the application of health-based guideline values for chemicals in air and water through its regional offices. ILO formulates

policies and programmes to help improve working conditions with respect to chemicals and produces international labour standards to serve as guidelines to national authorities in putting these risk reduction policies into action.

31. An important way to achieve risk reduction is to adopt cleaner production methods and a life-cycle approach to assessing and handling chemicals. UNEP operates a database providing information on cleaner production technologies and products. UNIDO and UNEP intend to increase their involvement in providing information on cleaner production, with UNEP establishing regional centres for the application of cleaner technologies. In the ECE recommendations on reduction, replacement, recovery, recycling and re-utilization of industrial products, residues or waste (1992), due consideration is given to the substitution of hazardous substances by less dangerous or non-hazardous ones with respect to possible health and environmental effects throughout all stages of the commercial life of a chemical.

32. The United Nations RTDG address not only classification and labelling but also requirements for packing, multimodal tank transport and consignment procedures. They are reflected in numerous national regulations and in a number of international instruments, including the International Maritime Dangerous Goods Code (under the auspices of IMO) and the European Agreement concerning International Carriage of Dangerous Goods by Road (under the auspices of ECE). They also influence emergency response approaches.

33. Phasing out of chloro-fluorocarbons (CFCs) is addressed by the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer, as amended. This example of a global risk reduction programme is in operation. It was initiated by UNEP.

34. OECD has developed an international cooperative risk reduction programme. A small number of substances (lead, cadmium, mercury, methylene chloride and brominated flame retardants) have been selected by OECD member countries for a pilot risk reduction project. The programme has been expanded to cover risk prevention in close cooperation with the pollution prevention and control programme. A number of new approaches will be explored, such as the use of pollutant release and transfer registers. Another focus will be to develop practical approaches to substances that have similar structure, use, hazardous properties or manufacturing processes.

35. There has been much activity by international organizations in addressing ways to prevent or respond to major chemical accidents at fixed installations. A key initiative was the EU directive on the major accident hazards of certain industrial activities. The directive, commonly known as the "Seveso" directive, was adopted in 1982. EU plans shortly to make a proposal to review the directive fundamentally and increase its scope.

36. ILO published a manual on major hazard control in 1988 and a Code of Practice on the Prevention of Major Industrial Accidents in 1991. The ILO Convention and Recommendation on the Prevention of Major Industrial Accidents were adopted in 1993.

37. Another key initiative is UNEP's Awareness and Preparedness for Emergencies at Local Level (APELL) Programme. It was launched in 1988, in cooperation with Governments and industry. Its main goal is to prevent technological accidents and reduce the impact of those that occur by assisting decision makers and technical personnel to increase community awareness of hazardous installations and to prepare response plans in case of unexpected events. UNEP is currently working with IMO to develop specific activities on the prevention of accidents in ports. UNEP, also within the framework of APELL and together with IPCS, WHO/EURO and OECD, has produced guidelines on the role of the health sector in chemical emergency preparedness and response. They will be used by IPCS and WHO regional offices in training activities. Case studies of successful APELL implementations will be published in 1994.

38. Recent initiatives in the prevention of chemical accidents include the 1992 ECE Convention on the Transboundary Effects of Industrial Accidents, which fostered regional cooperation concerning research and development, exchange of information and exchange of safe technologies, and OECD's comprehensive Guiding Principles for Accident Prevention, Preparedness and Response, which was published in 1993. OECD is currently working on extending the scope of its Guiding Principles, including the interface between fixed installations and various transport modes.

39. IPCS has four main projects to support national poison control programmes which, through a worldwide network of poison information centres and related medical and analytical toxicology facilities, provide information on a 24-hour basis. IPCS plans to study the epidemiology of pesticide poisonings in various parts of the world, with a view to reducing them. A Centre on Health Aspects of Chemical Accidents is being established in the Netherlands, in collaboration with WHO. IPCS is expanding its INTOX project to enhance chemical incident response and reporting and environmental health monitoring. Through a WHO European regional office project, in collaboration with IPCS, networking among centres for toxic alerts is being developed.

40. UNCED proposed that industry should develop an international code of principles for management of trade in chemicals, particularly with respect to their disposal. UNEP has been requested by its governing council to provide an international forum for consultation with private-sector parties on the preparation of a code of ethics on the international trade in chemicals. In 1992-1993 UNEP convened meetings with industry and other private-sector parties, international organizations and government experts. A final text for a code of ethics is expected to be developed in April 1994.

41. With the assistance of national and international organizations such as OECD and UNITAR, IPCS has been coordinating activities to facilitate the establishment of pollutant release and transfer registers (referred to as "emission inventories" in Agenda 21) as a risk reduction tool. In a separate but related activity, an ECE emission inventory guidebook for air pollutants will be developed by 1995, in collaboration with EU. Toxic release inventories, requiring industry to make an accounting of their toxic releases into the environment as part of community-right-to-know programmes, have led to voluntary clean-up in some countries - e.g., the United States of America.

5. Strengthening of national capabilities and capacities for management of chemicals

42. Most developed countries have at least some systems in place for the environmentally sound management of chemicals. In many developing countries and countries in transition, such systems are very limited or non-existent. The establishment and strengthening of such systems and institutions at the national and regional level in the developing world is needed.

43. Concern with insufficient control of chemicals prompted UNEP, in 1987, to adopt the London Guidelines for the Exchange of Information on Chemicals in International Trade, as described above. UNEP has developed training and technical assistance programmes in cooperation with other international organizations for the application of its legislative guidance documents on chemicals management in developing countries. The United Nations RTDG provide a sound basis for development of national legislation on the transport of dangerous chemicals. International policies and standards regarding the safety of chemicals at work are formulated by ILO. Standards are defined in conventions and recommendations which provide a model and stimulus for national legislation and practice in member States. ILO helps developing countries to establish or strengthen national frameworks so that they can eventually ratify ILO instruments. In the context of its new "active partnership policy", ILO is establishing, in key regions, multidisciplinary teams of ILO experts to assist in evaluating national occupational health and safety needs, including chemical safety requirements.

44. One of the objectives of IPCS is to improve the capabilities of national authorities to conduct their own evaluations of health and environmental hazards and risks from chemicals. Training courses have been conducted for senior decision makers and carefully chosen professionals. However, insufficient resources have precluded any large-scale training programme. IPCS provides comprehensive sets of tools for increasing the capacity of countries to deal effectively with poisonings, including guidelines on setting up and operating poison control centres and a handbook on recognizing poisoning and first aid measures. IPCS is preparing guidelines on the administrative and other structures needed to strengthen national chemical safety programmes.

45. WHO regional offices and IRPTC also run training courses in hazard and risk assessment, and IRPTC furthermore assists countries in establishing national chemical information centres. ECE encourages the implementation of OECD risk assessment practices by non-OECD members of the ECE region. Some countries in transition reported a particular need to boost their laboratories so as to be able to comply with guidelines. A slow phase-in method was reported to be working well in one transition economy, requiring compliance in the pharmaceutical industry first.

46. United Nations agencies and programmes, such as ILO, IMO, UNEP, WHO, UNIDO, IPCS and the United Nations Development Programme (UNDP) organize chemical safety training for developing countries. For example, UNIDO pays particular attention to training in the safe formulation and application of pesticides and has published safety guidelines. IPCS and ILO seek to train a country's trainers. ILO provides specific safety training to labour inspectorates.

47. The United Nations Centre for Urgent Environmental Assistance, which is an experimental programme of UNEP, is exploring ways to enhance existing international capacities for responding to emergencies with environmental consequences. Certain developing countries, such as Sri Lanka, have, with the assistance of international organizations, surveyed hazardous industries and their preparedness for emergencies by drawing up programmes for institutional strengthening.

48. ECE assists countries in economic transition in the clean-up of chemical waste sites. OECD's Development Assistance Committee recently adopted a number of guidelines on aid and environment which include guidance for the management of chemicals. UNITAR, in cooperation with IPCS and its cooperating organizations, has started work on an inventory of training assistance activities organized by international organizations in the field of chemical safety.

6. Prevention of illegal international traffic in toxic and dangerous products

49. The major United Nations activities relevant to the prevention of illegal international traffic in toxic and dangerous products are the London Guidelines, including its PIC procedure, which are also incorporated into the FAO International Code of Conduct on the Distribution and Safe Use of Pesticides, and the Consolidated List of Products Whose Consumption and/or Sale have been Banned, Withdrawn, Severely Restricted or Not Approved. Activities to strengthen national capabilities for the management of chemicals contribute to the reduction and/or prevention of such traffic.

50. The Economic and Social Commission for Asia and the Pacific (ESCAP) has been conducting a preliminary assessment of illegal traffic in toxic and dangerous products and wastes. ESCAP and the Economic and Social Commission for Western Asia (ESCWA) are planning to address the development of appropriate legislation.

7. New initiatives

51. The following new initiatives, critical for the environmentally sound management of chemicals and the implementation of chapter 19 of Agenda 21, have been taken by the United Nations system and multilateral organizations since UNCED:

(a) A strengthened and enhanced IPCS is being developed by the international community to promote coordination and cooperation among international organizations, including OECD, in the field of chemical safety, in line with earlier recommendations from a government-designated expert meeting;

(b) The establishment of an intergovernmental forum on chemical safety, to enable Governments to develop strategies, foster an understanding of issues related to the environmentally sound management of chemicals, and provide policy guidance at the intergovernmental level, will be discussed at the International

Conference on Chemical Safety, to be held in Stockholm, Sweden, 25-29 April 1994;

(c) A programme on sustainable economic and ecological development in the chemical industry in economies in transition has been launched by ECE;

(d) UNEP has evaluated the need for and possible elements of an internationally legally binding instrument concerning the PIC procedure.

B. Country experiences

52. In the developed world the Nordic countries have long-established cooperation mechanisms among themselves in the area of chemical control, and negotiations are under way for harmonizing legislation and guidelines with those of the EU countries. In some cases legislation has already been amended to comply with EU directives. OECD is another forum where the Nordic countries actively participate in the programme of rational distribution of work among members in order to avoid overlapping in chemical risk assessment. Finland and Norway have taken on two chemicals each for risk assessment in the high production volume chemicals programme of OECD. Exporters of banned or severely restricted chemicals have to inform the authorities not only in the importing country but also in their home countries before export (e.g., Finland). The Nordic chemical industry has embraced the "responsible care" programme and in Norway, at least, the chemical industry has demonstrated willingness to comply with EU regulations even before they are incorporated into domestic legislation.

53. One concern often voiced is the jurisdiction of so many different departments and ministries and the need to coordinate policies at the national level. Some Nordic countries have taken a very active role in the harmonization of classification and labelling work at the international level, with Sweden, together with the United States and EU, leading the work in OECD on acute health effects and environmental impacts, and Norway and the Netherlands acting as a clearing-house for the harmonization of classification of carcinogens.

54. Canada conducts many of its efforts with regard to research, the exchange of information and risk reduction of toxic chemicals within the multilateral programmes of OECD and ECE. Canada's policies are moving towards prevention rather than a "react and cure" model. This is embodied in voluntary programmes by industry, governmental legislation and economic incentives. The Federal Canadian Environmental Protection Act (CEPA) provides a tool for managing chemicals at each stage of the life cycle. The Federal Government has established the Domestic Substances List, containing substances used in Canada between 1984-1986. Any substance that is not on this list must be assessed prior to being manufactured or imported into Canada. There is a substantial federal effort being made to conduct environmental and health assessments for up to 100 priority chemicals by the year 2000. Canada has also established the National Pollutant Release Inventory, requiring companies to collect information on the release of specified substances into air, water and land. This information will be made available to the public. Risk reduction programmes have been established through the Green Plan which, inter alia, requires a 50 per cent reduction in sulphur dioxide emissions in eastern Canada by 1994.

55. Industry in Canada has developed its own guidelines and codes of practice involving toxic chemicals. It initiated the National Emission Reduction Master Plan, a voluntary approach to collecting release information. The Industrial Accidents Council of Canada develops guidance in chemical emergency prevention, preparedness and response. Partnerships between industry, Governments and other major groups, through voluntary action, seek the elimination or phase-out of bio-accumulative, persistent toxic substances.

56. The United States of America, being a major producer and consumer of chemicals, has an array of chemical-control programmes based in part on the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act. The United States has found that it makes sense to approach the control of pesticides one at a time. Each producer most prove conclusively that the pesticide will not cause unacceptable risks to human health or the environment before it is used. However, this approach has not proved successful in reducing risks for other chemicals and, consequently, the United States is looking at measures other than "command and control". It reports that its most important innovation in chemicals management in the past 10 years has derived from the Emergency Planning and Community Right-to-Know Act. Under that Act, local and State committees develop plans to prevent, prepare for and respond to chemical accidents. The Act also established inventories of the annual emissions of 300 toxic chemicals. Since companies must account for their emissions and make the information available to the public, the Act has put pressure on them to reduce their emission levels and identify wasteful processes. Using the inventory data as a baseline, about 2,000 companies have voluntarily agreed to reduce their releases of 17 priority chemicals by 33 per cent in 1993 and by 55 per cent in 1995. (The 33 per cent goal was achieved in 1992.) Even if voluntary measures cannot replace altogether a solid regulatory framework, the United States has found that public accountability, pollution prevention, voluntary programmes and economic incentives are successful because of their flexibility, timeliness and efficiency. Industry in the United States also subscribes to the "responsible care" principles, as a prerequisite for membership in industry associations. Consumer labelling is another way of creating market pressures on producers of chemicals to provide environmentally and health-friendly products. The United States is also involved in innovative approaches to risk reduction such as an evaluation of different alternatives to production in particular industries such as printing and dry cleaning. These approaches consider the impact of products and processes on workers, the public and the environment and then build into the design phase of the production cycle a comprehensive approach to achieve the lowest economically feasible risk. The United States is a leading country in many international activities in this area, such as harmonization, emergency planning and information exchange. It indicates that appropriate import controls are very effective in controlling illegal traffic in toxic chemicals.

57. The Netherlands has decided that, as a national objective, the maximum permissible chemical risk level for the public and the environment must not be exceeded by the year 2000. The Netherlands has made a significant contribution to the work of EU and OECD in this area by taking responsibility for evaluating the risk of seven chemicals.

58. Countries in transition in Central and Eastern Europe have been trying to align their legislation and guidelines as regards chemicals with those of EU and OECD. Since this involves considerable financial and trained human resources, prioritization has been essential. In Hungary this has led to prioritizing chemical safety and testing practices in the pharmaceutical industry. The environmental impact of chemicals is also being introduced into new legal frameworks. However, the national capacity to assess such impacts and risks is limited. In the Czech Republic a network of specialized laboratories has been formed, some of which are equipped with modern apparatus to perform chemical analysis using internationally approved methods. Control over the transportation of toxic chemicals is in many cases insufficient.

59. Most developing countries have limited or no capacities at all in this area. However, a few have reported some progress. Some countries are in the position to participate effectively in the "prior informed consent" procedure and other risk-reduction and assessment programmes and have established focal points staffed with appropriately trained personnel. Sri Lanka now has a complete inventory of chemicals used within its borders and has computerized data on the risk entailed in their use, relying on, among others, United Nations-system information sources. Sri Lanka has introduced a risk-reduction programme as well, beginning with a survey of the state of preparedness of industries with potentially hazardous processes and the planning of institutional strengthening in the area of emergency preparedness. The Republic of Korea has a Toxic Chemicals Control Act which requires risk assessment and annual registration of certain chemicals before manufacturing and importation.

60. The planning of chemical control, prevention and risk reduction measures has not kept pace with accelerated industrialization in many developing countries. Some chemical industries in developing countries emit significant quantities of pollutants into the sea and air, and small industries often emit untreated liquids into important waterways. In Tunisia, for example, some plants situated close to human dwellings have had to be closed because of the effects of pollution. In other cases important industries are prioritized for control measures, such as the oil industry in Myanmar and the mining and metallurgical industry in Bolivia.

61. Some developing countries have reported that the cost of cleaning up existing production processes is often prohibitive. Therefore, cleaner production in new installations is seen as the most cost-effective route to a less polluted future.

C. Technology and finance

1. Technology

62. Because of the magnitude of the adverse impacts of toxic chemicals on human health and the environment, as emphasized by UNCED in chapter 19, the concept of clean technologies which call for a shift from "end-of-pipe" solutions to environmental protection at the very source of production is particularly important in the developing countries, since those countries do not have adequate capacities for the effective control of toxic chemicals. Neither do

they have the capability to respond effectively to serious accidents or to monitor long-term environmental effects. Consequently policies favouring prevention rather than expensive clean-up should be preferred there. Appropriate technology standards should be developed with regard to investments from both indigenous and outside sources, including transnational corporations.

63. UNIDO has indicated that for the developing countries, the potentials arising from innovations in cleaner technologies are important, since those countries will be adding significantly to their capital stock. Ten years hence, new plants and equipment will account for more than one half of the industrial output of the developing countries. Many of them currently have a disproportionately high level of old, inefficient and pollution-intensive capital stock in all sectors, partly due to low growth in the 1980s, which resulted in low turnover of capital stock. This, plus an accelerated increase in industrial growth, means that newly installed industrial plants and equipment will be significant additions to existing capital stock. Each new investment offers an opportunity to incorporate resource-efficient and less pollution-intensive technology.

64. In order to implement the objectives in chapter 19 of Agenda 21, national technological capacities have to be enhanced, especially in developing countries and economies in transition. For example, timely information exchange currently requires modern information technology, which, although costly, is efficient and, especially in emergency situations, can save many lives. The same applies for internationally accepted testing, which can only be done with modern equipment and apparatus, following accepted laboratory methods. Similarly, industrial processes that are designed to reduce the risk of exposure of workers and others in many instances also involve modern technology. The transfer of such modern technology to the developing countries is essential. National authorities responsible for chemical control have to be equipped to test chemicals and carry out other important tasks. Moreover, developing countries should promote legislation in areas such as labour safety and emission standards so that industry will be encouraged to use the best available technology when toxic chemicals are involved.

2. Finance

65. Income from the manufacture, trade and use of chemicals must be utilized to a greater extent to finance environmentally sound management. Although some income is already used for this purpose, additional fiscal measures should be considered to strengthen support work at the national and international levels.

66. In the pre-UNCED assessment of funding needs, the cost of sound management of chemicals in industrialized countries was calculated at 0.15 per cent of the value of the chemicals manufactured or imported. It was assumed that the same ratio would apply for developing countries - an estimated cost of $500,000,000-600,000,000. It was suggested that 20 per cent of that amount, or $100,000,000-150,000,000, be concessional finance provided by the international community to developing countries.

67. The costs and spending reported below reflect those of United Nations bodies and programmes in relation to the implementation of the different programme areas and do not include costs associated with research. It should be noted that analysis of the current funding situation is severely limited by the lack of a harmonized format for reporting financial data.

68. Agenda 21 estimates that some $30,000,000 per annum would be needed to meet the objective of accelerating the assessment of chemical risks so that by the year 2000 some 500 chemicals would be assessed and appropriate information on them disseminated. Currently, the United Nations system reports spending a total of some $10,000,000 on all aspects of international assessment of chemical risks. This does not include costs associated with research and data generation.

69. Agenda 21 estimates that about $3,000,000 per annum would be needed to strengthen the capacities of international organizations to coordinate the work of harmonization. Currently ILO, the only organization providing cost figures, spends less than $500,000 per annum in this programme area.

70. Agenda 21 estimates that $10,000,000 per annum would be required to implement a programme on information exchange. The current spending of United Nations organizations in this area is estimated to be $4,000,000.

71. There was no comprehensive estimate of costs made for the programme area on risk reduction during UNCED, and incomplete figures have been provided by the United Nations agencies. To train and strengthen emergency and poison control centres, it was estimated that some $4,000,000 per annum would be required. Current funding levels for international work in this field is approximately $1,800,000 per annum.

72. The figure for the programme area on strengthening management capacity is given above (para. 66) - 0.15 per cent of the value of the chemicals manufactured or imported. UNEP has reported that the current costs of its programme in this area total approximately $1,000,000 per annum.

73. No estimate is included in Agenda 21 for the implementation of a programme on the prevention of illegal traffic of toxic and dangerous products. The relevant budgets of the United Nations system for the 1994/95 biennium amount to about $750,000 per annum as a minimum.

74. The cost for providing the basic infrastructure for coordination within a strengthened and expanded IPCS is estimated to be approximately $600,000 per annum during 1994/95 and will be shared among the organizations agreeing to participate in the work.

75. IPCS has been responsible for preparing for the International Conference on Chemical Safety, where the first intergovernmental forum on chemical safety is expected to be established. The cost of preparing for and holding the Conference has been approximately $1,000,000, of which about one third has been provided by the United Nations system. It is estimated that a fully operational secretariat for the forum and its subsidiary bodies would cost approximately $1,000,000 per annum depending, inter alia, on the work proposed by the forum.

76. It is apparent from the above estimates that, with regard to required activities by the United Nations and other multilateral organizations, additional financial resources will be required in order to take action in the programme areas in chapter 19. The relevant organizations are seeking ways and means to minimize costs through enhanced collaboration and cooperation and more intensive involvement of national authorities and the private sector.

77. The financing of capacity-building and technology transfer, especially through training and education, is very important, but no estimate of requirements is available. Similarly, no estimate is available for the important task of reducing toxic emissions.

III. CONCLUSIONS AND PROPOSALS FOR ACTION

78. It is well established that chemicals are essential for national, regional and global development. There is also worldwide awareness that chemicals must be produced and used in a sustainable way - i.e., in a way which does not pose harm to human health and the environment and which safeguards natural resources from degradation. National authorities must evaluate the risks posed by chemicals and develop risk management strategies adapted to local circumstances, including broad-based approaches to reduce the risks from toxic chemicals, taking into account their entire life cycle. In most countries, national capabilities and capacities for the promotion of chemical safety need to be strengthened. In developing countries, extensive support is required, particularly from the international community.

79. A great deal of work has been accomplished by United Nations organizations and programmes and other agencies at the global, regional and national levels to encourage the environmentally sound management of chemicals. This work has been critical for assessing potential risks and assisting countries to manage the risks exposed.

80. To use scarce resources more effectively, international coordination and cooperation is seen as essential for the successful implementation of chapter 19 of Agenda 21. Consequently, proposals include enhanced international cooperation through a strengthened IPCS, involving not only WHO, ILO and UNEP but also FAO, UNIDO, OECD and EU, and an intergovernmental forum on chemical safety which would recommend concerted international strategies and foster understanding by Governments of issues related to the implementation of chapter 19.

A. Conclusions

81. New and innovative ways of producing internationally accepted assessments of a large number of chemicals have to be developed in order better to utilize national and international resources. Internationally harmonized approaches to conducting and reporting risk assessments are vital. Guidance for setting national limits for exposure to chemicals from different media and guideline ranges based on internationally accepted assessments are needed to assist national authorities taking decisions for the management of chemical risks.

82. Significant progress has been made with the technical work of developing a globally harmonized system for the classification of chemicals, but there is need to further strengthen coordination by involving all relevant international organizations. An international framework for translating the results of technical work on harmonization into an instrument or recommendations applicable legally at the national level needs to be developed through appropriate international consultations.

83. Continuous efforts are needed to strengthen international information exchange networks, to encourage the creation of national or regional chemical information centres, and to enhance the participation of developed and developing countries in the networks. United Nations bodies/programmes and other international organizations need to strengthen their efforts to ensure that the information available and methods for gaining access to it meet user requirements worldwide. Particular attention should be paid to the areas of risk assessment, cleaner and safer technologies, and chemical emergency preparedness and response.

84. In order to protect human health and the environment from exposure to hazardous chemicals, United Nations bodies and programmes should continue to assist countries in the implementation and enforcement of the Prior Informed Consent (PIC) procedure for banned and severely restricted chemicals and encourage implementation of the ILO conventions on chemicals and major industrial accidents at the national level. Although risk reduction activities are primarily national in nature, all relevant United Nations organizations and programmes, intergovernmental bodies and the private sector should actively participate in PIC through information exchange and capacity-building activities. There is also a need to strengthen efforts to assist countries to implement relevant conventions and recommendations of United Nations bodies. The United Nations and other international organizations should facilitate immediate action in developing countries to reduce specific risks that are both readily identifiable and controllable, especially where significant benefits can be achieved at relatively small cost. United Nations bodies and programmes and other international organizations should continue their support of specific risk-reduction initiatives, particularly registers on the release and transfer of pollutants, pesticide safety and the development of safer substitutes. There is also a need for these organizations to assist at the national level in the implementation of internationally agreed systems concerning the prevention of response to major industrial accidents and response to those that occur and in the establishment of poison control centres.

85. United Nations bodies and other international organizations, with the support from countries with advanced chemical management systems, should give highest priority to the strengthening of national capabilities to manage chemicals safely via, for example, national and regional training. They should also assist countries to prepare national profiles indicating their capabilities and capacities for the management of chemicals and support the development of appropriate strategies to implement and enforce chemical risk management measures. There is a clear need to improve the coordination of education, training and technical assistance activities among international bodies, national Governments and non-governmental organizations.

86. There is an urgent need to increase international efforts to assist countries in the development and enforcement of legislation to control the illegal movement of toxic chemicals. Furthermore, appropriate international legal instruments, including one on the mandatory application of the PIC procedure, need to be elaborated and eventually adopted.

87. Involvement in and support of international initiatives by the non-governmental organization community, including research institutes and centres, need to be encouraged in order to make the best use of human resources for addressing key issues.

88. In addition, in order to more effectively use scarce resources, enhanced international coordination and cooperation is seen as essential for the successful implementation of chapter 19 of Agenda 21.

B. Proposals for action

89. The following proposals reflect the increased effort and support necessary for the effective implementation of chapter 19. Particular attention is paid to ways of supporting the role played by the United Nations system.

1. Need for sustainable development

90. To achieve sustainable development, Governments must ensure that chemicals are used and managed in a sustainable way - i.e., one that does not pose harm to human health or the environment and that safeguards natural resources, taking local circumstances into account.

91. In order to finance environmentally sound management of chemicals, countries should be urged to develop appropriate economic instruments - e.g., taxes or levies - to strengthen the management of chemicals throughout their life cycle. Increased finance raised nationally would enable countries to make a greater contribution to international activities and to enhance international cooperation in this field. Governments should, furthermore, provide industry with economic incentives for undertaking environmentally sound management of chemicals.

2. Capacity-building

92. International and national organizations should give higher priority to capacity-building and improving coordination among different agencies and programmes for the successful implementation of chapter 19 at the national level.

93. Governments, with the assistance of relevant international organizations and programmes, should develop national profiles to indicate the current capabilities and capacities for the management of chemicals, the need for chemical legislation and enforcement, and education, training and technical assistance. Countries with more advanced chemical management systems should

provide information, training and technical assistance to other countries for the development of infrastructure and capacity to manage chemicals safely.

94. Governments should be encouraged to introduce measures to reduce risks that are both readily identifiable and readily controllable, as a first immediate step.

95. Countries with more advanced chemical management systems should consider ways of facilitating the transfer of cleaner and safer technology to less developed countries, bearing in mind the difficulties posed by the limited financial means of developing countries to gain access to such technology.

3. Coordination and cooperation

96. Increased coordination of United Nations bodies and other international organizations involved in chemical assessment and management is needed in order to improve and enhance international cooperation and avoid unnecessary duplication of effort. All steps should be taken to facilitate the active participation of all major players on the international chemicals stage in a strengthened IPCS to share the burden of work.

97. There is an urgent need further to develop and implement concerted international strategies for chemical risk assessment and management in all countries. Governments should therefore strongly support all efforts to strengthen international cooperation on chemicals and the establishment of the an intergovernmental forum on chemical safety.

98. International organizations should be urged to strengthen harmonization of procedures and approaches for risk assessment, information exchange and risk management, including harmonization of terminology.

99. Further efforts are required at the national and international levels to ensure compatibility and comparability of data collection, processing and information exchange, since the validity of assessments depends on the quality of the information used.

100. Risk assessment is highly demanding of scientific resources and in order to meet the goals of chapter 19 there is need to join forces and increase the scientific contribution from countries to the international arena for accelerated assessments of risks and better interpretations of data. There is also need to understand better the mechanisms of toxicity and to develop and validate toxicity tests that reduce the use of vertebrate animals.

101. The technical work coordinated by the United Nations system, which underpins the harmonization and compatibility of classification and labelling, needs additional support from countries in order to meet the chapter 19 goals.

102. In the area of information exchange, there is need for increased data contributions from national sources into international data banks - e.g., the UNEP IRPTC.

103. As part of a longer-term objective in the area of risk reduction, there is need for promotion, at both the national and international levels, of the development of safer technologies and processes and for safer substitutes for harmful chemicals.

104. Since industry is a major player in furthering the objectives of chapter 19 - in particular with respect to risk assessment, including the generation and provision of data and the adoption and implementation of risk reduction measures - it should be encouraged to adopt a code of ethics on international trade in chemicals such as the one that has been developed under the auspices of UNEP.

4. Awareness of the general public

105. Efforts should be made at the national and international levels to ensure that the general public, and especially people at work, understand the meaning of labels and other ways of communicating risks and risk management measures.

106. International organizations should make the best use of active participation by the non-governmental organizations concerned with chemical risks posed to health and the environment, including unions and consumer groups. Such non-governmental organizations could contribute to information exchange and a wider understanding of harmonized classification and labelling.

5. Development of national legislation and implementation of instruments of the United Nations system

107. Greater national attention should be given to strengthening the enforcement of national legislation in order more to effectively control chemical risks. Chemical legislation needs to be strengthened in all countries, particularly in developing countries undergoing rapid industrialization. Legislative guidance should urgently be provided to such countries.

108. To increase their effectiveness, legal and other instruments developed under the auspices of the United Nations system need to be more widely ratified and/or implemented at the national level. Wider implementation is particularly important for risk management/reduction initiatives and for the PIC procedure. To prevent illegal traffic in toxic and dangerous products, international legal instruments, including one on the mandatory application of the PIC procedure, should be elaborated and eventually adopted.

6. Effectiveness indicators

109. It is important for the international community to set goals against which progress in the different programme areas can be measured. In preparation for a longer-term objective, it is also important to start considering ways of assessing cost-effectiveness in various programme areas and particular risk management undertakings and asking whether initiatives meet user needs.

Notes

1/ Rune Lonngren, International Approaches to Chemicals Control: A Historical Overview (Stockholm, National Chemicals Inspectorate, 1992).

2/ Industry and Development, Global Report, 1993/94 (United Nations publication, Sales No. E.93.III.E.4).

3/ Sweden, Ministry of the Environment and Natural Resources, Hazardous Goods (Stockholm, 1992).

4/ Report of Conference on Industry, the Environment and Human Health: In Search of a Harmonious Relationship, Minamata, Japan, 13-16 November 1991 (Tokyo, United Nations University, 1992).